Figures

Figure 1 A

```
   1  gtggcacttt tcggggaaat gtgcgcggaa cccctatttg tttatttttc taaatacatt
  61  caaatatgta tccgctcatg agacaataac cctgataaat gcttcaataa tattgaaaaa
 121  ggaagagtat gagtattcaa catttccgtg tcgcccttat tccctttttt gcggcatttt
 181  gccttcctgt ttttgctcac ccagaaacgc tggtgaaagt aaaagatgct gaagatcagt
 241  tgggtgcacg agtgggttac atcgaactgg atctcaacag cggtaagatc cttgagagtt
 301  ttcgccccga agaacgtttt ccaatgatga gcacttttaa agttctgcta tgtggcgcgg
 361  tattatcccg tattgacgcc gggcaagagc aactcggtcg ccgcatacac tattctcaga
 421  atgacttggt tgagtactca ccagtcacag aaaagcatct tacggatggc atgacagtaa
 481  gagaattatg cagtgctgcc ataaccatga gtgataacac tgcggccaac ttacttctga
 541  caacgatcgg aggaccgaag gagctaaccg ctttttttgca caacatgggg gatcatgtaa
 601  ctcgccttga tcgttgggaa ccggagctga atgaagccat accaaacgac gagcgtgaca
 661  ccacgatgcc tgtagcaatg gcaacaacgt tgcgcaaact attaactggc gaactactta
 721  ctctagcttc ccggcaacaa ttaatagact ggatggaggc ggataaagtt gcaggaccac
 781  ttctgcgctc ggcccttccg gctggctggt ttattgctga taaatctgga gccggtgagc
 841  gtgggtctcg cggtatcatt gcagcactgg ggccagatgg taagccctcc cgtatcgtag
 901  ttatctacac gacggggagt caggcaacta tggatgaacg aaatagacag atcgctgaga
 961  taggtgcctc actgattaag cattggtaac tgtcagacca agtttactca tatatacttt
1021  agattgattt aaaacttcat ttttaattta aaaggatcta ggtgaagatc ctttttgata
1081  atctcatgac caaaatccct taacgtgagt tttcgttcca ctgagcgtca gaccccgtag
1141  aaaagatcaa aggatcttct tgagatcctt ttttctgcg cgtaatctgc tgcttgcaaa
```

```
1201  caaaaaaacc accgctacca gcggtggttt gtttgccgga tcaagagcta ccaactcttt

1261  ttccgaaggt aactggcttc agcagagcgc agataccaaa tactgtcctt ctagtgtagc

1321  cgtagttagg ccaccacttc aagaactctg tagcaccgcc tacatacctc gctctgctaa

1381  tcctgttacc agtggctgct gccagtggcg ataagtcgtg tcttaccggg ttggactcaa

1441  gacgatagtt accggataag gcgcagcggt cgggctgaac gggggggttcg tgcacacagc

1501  ccagcttgga gcgaacgacc tacaccgaac tgagatacct acagcgtgag ctatgagaaa

1561  gcgccacgct tcccgaaggg agaaaggcgg acaggtatcc ggtaagcggc agggtcggaa

1621  caggagagcg cacgagggag cttccagggg gaaacgcctg gtatctttat agtcctgtcg

1681  ggtttcgcca cctctgactt gagcgtcgat ttttgtgatg ctcgtcaggg gggcggagcc

1741  tatggaaaaa cgccagcaac gcggcctttt tacggttcct ggccttttgc tggccttttg

1801  ctcacatgtt ctttcctgcg ttatcccctg attctgtgga taaccgtatt accgcctttg

1861  agtgagctga taccgctcgc cgcagccgaa cgaccgagcg cagcgagtca gtgagcgagg

1921  aagcggaaga gcgcccaata cgcaaaccgc ctctccccgc gcgttggccg attcattaat

1981  gcagctggca cgacaggttt cccgactgga aagcgggcag tgagcgcaac gcaattaatg

2041  tgagttagct cactcattag gcaccccagg ctttacactt tatgcttccg gctcgtatgt

2101  tgtgtggaat tgtgagcgga taacaatttc acacaggaaa cagctatgac catgattacg

                                                    KpnI
                                                    ------
2161  ccaagcgcgc aattaaccct cactaaaggg aacaaaagct gggtaccggg ccccccctcg
                  >>........T3 ........>>

                        HindIII                 PstI
                        -------                 -------
2221  aggtcgacgg tatcgataag cttgatatcg aattcctgca gcccccgaga cgcgtgttct
                                                                >>.pSAG1.>

2281  aaccacaaac cttgagacgc gtgttccaac cacgcaccct gacacgcgtg ttccaaccac
      >.............................pSAG1.............................>

2341  gcaccctgag acgcgtgttc tawccacgca ccctgagacg cgtgttctaa ccacgcaccc
      >.............................pSAG1.............................>
```

```
2401  tgagacgcgt gttctgccgc acaatgtgca cctgtaggaa gctgtagtca ctgctgattc
      >.............................pSAG1.............................>

2461  tcactgttct cggcaagggc cgacgaccgg agtacagttt ttgtgggcag agccgttgtg
      >.............................pSAG1.............................>

2521  cagctttccg ttcttctcgg ttgtgtcaca tgtgtcattg tcgtgtaaac acacggttgt
      >.............................pSAG1.............................>>

2581  atgtcggttt cgctgcacca cttcattatt tcttctggtt ttttgacgag tatgcatgag
      >>>
      >>.........................SAG1 CDS.........................>>
                                                                  >>>
                                                                     >>>

2641  aaaaaaatca ctggatatac caccgttgat atatcccaat ggcatcgtaa agaacatttt
      >.............................CAT CDS.............................>

2701  gaggcatttc agtcagttgc tcaatgtacc tataaccaga ccgttcagct ggatattacg
      >.............................CAT CDS.............................>

2761  gccttttaa agaccgtaaa gaaaaataag cacaagtttt atccggcctt tattcacatt
      >.............................CAT CDS.............................>

2821  cttgcccgcc tgatgaatgc tcatccggaa ttccgtatgg caatgaaaga cggtgagctg
      >.............................CAT CDS.............................>

2881  gtgatatggg atagtgttca cccttgttac accgttttcc atgagcaaac tgaaacgttt
      >.............................CAT CDS.............................>

2941  tcatcgctct ggagtgaata ccacgacgat ttccggcagt ttctacacat atattcgcaa
      >.............................CAT CDS.............................>

3001  gatgtggcgt gttacggtga aaacctggcc tatttcccta aagggtttat tgagaatatg
      >.............................CAT CDS.............................>

3061  tttttcgtct cagccaatcc ctgggtgagt ttcaccagtt ttgatttaaa cgtggccaat
      >.............................CAT CDS.............................>

3121  atggacaact tcttcgcccc cgttttcacc atgggcaaat attatacgca aggcgacaag
      >.............................CAT CDS.............................>

3181  gtgctgatgc cgctggcgat tcaggttcat catgccgttt gtgatggctt ccatgtcggc
      >.............................CAT CDS.............................>

3241  agaatgctta atgaattaca acagtactgc gatgagtggc agggcggggc ktaaktratc
      >.........................CAT CDS.........................>>
                                                              >>...>

3301  accgttgtgc tcacttctca aatcgacaaa ggaaacacac ttcgtgcagc atgtgcccca
      >.............................SAG1-I.............................>
```

```
3361  ttataaagaa actgagttgt tccgctgtgg cttgcaggtg tcacatccac aaaaaccggc
      >.........................SAG1-I.........................>

3421  cgactctaaa taggagtgtt tcgcagcaag cagcgaaagt ttatgactgg gtccgaatct
      >.........................SAG1-I.........................>

3481  ctgaacggat gtgtggcgga cctggctgat gttgatcgcc gtcgacacac gcgccacatg
      >.........................SAG1-I.........................>

3541  ggtcaataca caagacagct atcagttgtt ttagtcgaac cggttaacac aattcttgcc
      >.........................SAG1-I.........................>
            HindIII
            -------
3601  cccccgaaag cttcgaatct ctgaacggat gtgtggcgga cctggctgat gttgatcgcc
      >....>>
                  >>.................SAG1-II.................>

3661  gtcgacacac gcgccacatg ggtcaataca caagacagct atcagttgtt ttagtcgaac
      >.........................SAG1-II........................>

3721  cggttaacac aattcttgcc cccccgaggg ggatccacta gttctagagc ggcctcgagg
      >.........SAG1-II..........>>
                                  >>............vector.............>

3781  tcgacggtat cgataagcta gagcttcagc atcatctctg gaagcatccc ctgaactgcc
      >.....vector......>>
                         >>.................pTUB1..................>

3841  tgagtctacc aagagcactg gcgaaggctg tgagtagtcg gacaggcacg gtgactcatg
      >.........................pTUB1.........................>

3901  ttgttggaca gtagcgagct ctgggttaac cgcatattca ctaactggct ccgtcctgtt
      >.........................pTUB1.........................>

3961  gtcattagat actgaatcag gtaacgatac atgagcagca tcctcgtgtt ccaggcgcat
      >.........................pTUB1.........................>

4021  gtcctgctcc ggcttgcaac caaggacccg tggttcatct ttgggtctct ccgtactggg
      >.........................pTUB1.........................>

4081  tggtagaggt gaaactgtcg acgtggatgc agctgccctg cttagagtac ggacgaagtg
      >.........................pTUB1.........................>

4141  aatagctgcg tctgcatgaa caaggggctc tgaggcccgc tgtgatacga aaggtttgct
      >.........................pTUB1.........................>

4201  ggctactgaa cataggtctc gcagtgcggg ggcatactcc agtcggcctt cacgaaactt
      >.........................pTUB1.........................>

4261  cgtgaccagg cgatcaacaa gcggcgtcac gcgagttaaa tccgtccaga gaaagccacc
      >.........................pTUB1.........................>

4321  atagtgcacc atatactgcc ggcacatctt gctgaaagtc gtggcgtgtc gatcagctaa
      >.........................pTUB1.........................>
```

```
4381  gtcctgtgtg tacttggaag tgagcagctc ttccagttcg gtccagtcat attgccatgc
      >.............................pTUB1.............................>

4441  cctagccacc gtttcaccag cgtccgatgc aggctcacct agccgatacc tgtgaccgtt
      >.............................pTUB1.............................>

4501  catatatgag ttgctattac atctgtcggc cgtaacgaca caaggagatg cggctggagg
      >.............................pTUB1.............................>

4561  caacgggttt gtgagcacca ttttgactct gtcacggagt aaaaaacatt tattcgaact
      >.............................pTUB1.............................>

4621  ttgtacgagc gcagtcagta gaagtcaacc acgcgtatca actacgctgc aattacagag
      >.............................pTUB1.............................>

4681  gacagggaca gggaaaaaaa gccgaagagg ttgccggtgt taggagatga cgagacgttt
      >.............................pTUB1.............................>

4741  aaacggccgc tggctattgt tcgggcatcg ttgagccaca agcgatcaag gtgaaaacaa
      >.............................pTUB1.............................>

4801  agttaaatag ttatgctgga gcgattgccc tgctgaatct tcagatcgga cgaacagtca
      >.............................pTUB1.............................>

4861  ttctggccca ctgtacttga tgtgttcgat gtaaatcaca ctcagtcgcg tgctcggtag
      >.............................pTUB1.............................>

4921  caatcaagtt gctcttttct ctcctttcta gacacggtaa gaacgcttat gaacacgcat
      >.............................pTUB1.............................>

4981  acacgcatag tttttgctag aatgcagcga ccagatgtcg caaggtcgtc tcccccatcg
      >.............................pTUB1.............................>

5041  actggagaat caagaaaaac ctgcgttgat cccaaacgta ctctgtggtt ggtgcaacca
      >.............................pTUB1.............................>

5101  gaagtttcat actgatcaaa agccagtgaa cagctggggg acattgcagg tctggtgctt
      >.............................pTUB1.............................>

5161  caagaagcgc tgaagaagaa agtggcgaaa ccctcggcag ttgccttgga agaggcgccg
      >.............................pTUB1.............................>

5221  tgcatgtaac ttctgaagtg cgtagtacct ggctcctaat gctgttttgt gtttcgctgt
      >.............................pTUB1.............................>

5281  ctgggcagca gtagaatgct gtgccagaat tagccactat tttagacatt tatttacaca
      >.............................pTUB1.............................>

5341  ttttttttct gatgaacttg gcttattcat tttttcaagt cttgccactg ggtggtggca
```

```
      >.............................pTUB1.............................>

5401  tgagactcgc ttagatgtat gtgggtgttg caatcacgct ggatgctcgg cttatttctg
      >.............................pTUB1.............................>

5461  agtttttgt ggttttgaca atgggaacga tttcagagct actatttcac gtggtacggt
      >.............................pTUB1.............................>

5521  tatgagccac taaaaaaacg aagaaaaacg ctgtttgcag aaacaatagc aaactgtttt
      >.............................pTUB1.............................>

5581  tcgtcatagt aactcagcgc ccccttgccc ccccccagca gtgagatgca agacaatcct
      >.............................pTUB1.............................>

5641  ctctaccaca gcttttgttg cgtctgtttc aaattttcag cgctcgcgaa aggcatcacg
      >.............................pTUB1.............................>

5701  aacaacatta tgagagggag caggtttgtg gggctggcgg gtgcaggaat gtgttcctgc
      >.............................pTUB1.............................>

5761  gaaaaaggcc tctgctgaga aggtcgtggc gtttgaaaaa tatccgaggt agcaaagact
      >.............................pTUB1.............................>

5821  tgtttcagtg ctccccttttt gaagacctgc ggcggcagtg cactgaagag taactccaaa
      >.............................pTUB1.............................>

5881  tcaccgcggt gagacttggt tttttccgtt atccttcaga agagtgtgtt ttcgtttaat
      >.............................pTUB1.............................>

5941  tcgtcacaga ccacgaaaaa cgaaccatcg aagacgatca ctgcgtccgc gtgcatctgg
      >.............................pTUB1.............................>

6001  atggatgacc cacatctgtt gcagccgtcg cagacatgca tgtcccgcgt tcgtgaaatt
      >.............................pTUB1.............................>

6061  ctctgcatca gcggagtgat caggaatcat cgtctcagcg ggatgacgtt gcggagcagg
      >.............................pTUB1.............................>

6121  ccggctcgcg ggggcagtca gatgccgaag gcgtaactca ggacgcttgc gctcatcgca
      >.............................pTUB1.............................>

6181  gaacaggggt ggtgcctgca ttgggtgcgg ttggtgatcc tggttggacc ggtggagatg
      >.............................pTUB1.............................>

6241  cgcgcgcacg aaggggatgt gtcagaaaca ttttgtttgt tctctgtgaa cttttagatg
      >.............................pTUB1.............................>

6301  tgttaaaggc ggcgaatatt agcagagagt cctccttgtt ggattctctc ttgaatttcg
      >.............................pTUB1.............................>
```

```
6361  ccctttcctt ctctttgcga gtctcgtaga gaacaagcac tcgttcgccg tccctgacga
      >.............................pTUB1.............................>

6421  cgcaacccgc gcagaagaca tccaccaaac ggtgttacac aatcaccttg tgtgaagttc
      >.............................pTUB1.............................>

                                                      BglII
                                                      ------
6481  ttgcggaaaa ctactcgttg gcatttttc ttgaattccc agatctaaaa tggtgagcaa
      >.................pTUB1.................>>
                                                              >>.YFP CDS.>
                                                              >>>>

6541  gggcgaggag ctgttcaccg gggtggtgcc catcctggtc gagctggacg gcgacgtaaa
      >.............................YFP CDS.............................>

6601  cggccacaag ttcagcgtgt ccggcgaggg cgagggcgat gccacctacg gcaagctgac
      >.............................YFP CDS.............................>

6661  cctgaagttc atctgcacca ccggcaagct gcccgtgccc tggcccaccc tcgtgaccac
      >.............................YFP CDS.............................>
                    PstI
                    ------
6721  cttcggctac ggcctgcagt gcttcgcccg ctaccccgac cacatgaagc agcacgactt
      >.............................YFP CDS.............................>

6781  cttcaagtcc gccatgcccg aaggctacgt ccaggagcgc accatcttct tcaaggacga
      >.............................YFP CDS.............................>

6841  cggcaactac aagacccgcg ccgaggtgaa gttcgagggc gacaccctgg ygaaccgcat
      >.............................YFP CDS.............................>

6901  cgagctgaag ggcatcgact tcaaggagga cggcaacatc ctggggcaca agctggagta
      >.............................YFP CDS.............................>

6961  caactacaac agccacaacg tctatatcat ggccgacaag cagaagaacg gcatcaaggt
      >.............................YFP CDS.............................>

7021  gaacttcaag atccgccaca acatcgagga cggcagcgtg cagctcgccg accactacca
      >.............................YFP CDS.............................>

7081  gcagaacacc cccatcggcg acggccccgt gctgctgccc gacaaccact acctgagcta
      >.............................YFP CDS.............................>

7141  ccagtccgcc ctgagcaaag accccaacga gaagcgcgat cacatggtcc tgctggagtt
      >.............................YFP CDS.............................>
                                                        AvrII
                                                        -------
7201  cgtgaccgcc gccgggatca ctctcggcat ggacgagctg tacaagccta ggatgtctag
      >.....................YFP CDS...................>>
                                                                >>.....>
                                                                >>>

7261  attagataaa agtaaagtga ttaacagcgc attagagctg cttaatgagg tcggaatcga
      >.............................TR CDS.............................>
```

```
7321  aggtttaaca acccgtaaac tcgcccagaa gctaggtgta gagcagccta cattgtattg
      >.........................TR CDS.........................>

7381  gcatgtaaaa aataagcggg ctttgctcga cgccttagcc attgagatgt tagataggca
      >.........................TR CDS.........................>

7441  ccatactcac ttttgccctt tagaagggga aagctggcaa gatttttac gtaataacgc
      >.........................TR CDS.........................>

7501  taaaagtttt agatgtgctt tactaagtca tcgcgatgga gcaaaagtac atttaggtac
      >.........................TR CDS.........................>

7561  acggcctaca gaaaaacagt atgaaactct cgaaaatcaa ttagcctttt tatgccaaca
      >.........................TR CDS.........................>

7621  aggtttttca ctagagaatg cattatatgc actcagcgct gtggggcatt ttactttagg
      >.........................TR CDS.........................>

7681  ttgcgtattg gaagatcaag agcatcaagt cgctaaagaa gaaagggaaa cacctactac
      >.........................TR CDS.........................>

7741  tgatagtatg ccgccattat tacgacaagc tatcgaatta tttgatcacc aaggtgcaga
      >.........................TR CDS.........................>

7801  gccagccttc ttattcggcc ttgaattgat catatgcgga ttagaaaaac aacttaaatg
      >.........................TR CDS.........................>
                      PstI
                      -------
7861  tgaaagtggg tcttaactgc agcccacaga agctgcccgt ctctcgtttt cctctctttt
      >....TR CDS....>>
                                >>.............DHFR.............>

7921  cggagggatc agggagagtg cctcgggtcg gagagagctg acgaggggt gccagagacc
      >.........................DHFR.........................>

7981  cctgtgtcct ttatcgaaga aaagggatga ctcttcatgt ggcatttcac acagtctcac
      >.........................DHFR.........................>

8041  ctcgccttgt tttcttttg tcaatcagaa cgaaagcgag ttgcgggtga cgcagatgtg
      >.........................DHFR.........................>

8101  cgtgtatcca ctcgtgaatg cgttatcgtt ctgtatgccg ctagagtgct ggactgttgc
      >.........................DHFR.........................>

8161  tgtctgccca cgacagcaga caactttcct tctatgcact tgcaggatgg tgcagcgcaa
      >.........................DHFR.........................>

8221  acgacggaga gaaaggagca ccctctcagt ttccctacga tgtgctgtca gtttcgactc
      >.........................DHFR.........................>

8281  ttcaccgcga acgattggcg atacgtctct gttgacttgt taggctccga ccacgaagct
      >.........................DHFR.........................>
```

```
8341  cccttaacta rataagccgc gacacctaag tgtacaccat ttgcagatcg ataatctgcg
      >..........................DHFR..........................>

8401  accgctgaat ccgtccagat cagtaaaacc gcaccaccta agtgtaaacc ttgtttaggt
      >..........................DHFR..........................>

8461  cgataaaatg ctaccaaccc ccacccacaa tcgagccttg agcgtttctg cgcacgcgtt
      >..........................DHFR..........................>

8521  ggcctacgtg acttgctgat gcctgcctct ggccattcat gccagtcagt gcgcataaaa
      >..........................DHFR..........................>

8581  atgtggacac agtcggttga caagtgttct ggcaggctac agtgacaccg cggtgagggg
      >..........................DHFR..........................>
                        NotI
                      ---------
8641  gatccactag tctagagcgg ccgccaccgc ggtggagctc caattcgccc tatagtgagt
      >.....DHFR.....>>
                                                          <<...T7....<

8701  cgtattacgc gcgctcactg gccgtcgttt tacaacgtcg tgactgggaa aaccctggcg
      <..T7...<<

8761  ttacccaact taatcgcctt gcagcacatc ccccttcgc cagctggcgt aatagcgaag

8821  aggcccgcac cgatcgccct tcccaacagt tgcgcagcct gaatggcgaa tgggacgcgc

8881  cctgtagcgg cgcattaagc gcggcgggtg tggtggttac gcgcagcgtg accgctacac

8941  ttgccagcgc cctagcgccc gctcctttcg ctttcttccc ttcctttctc gccacgttcg

9001  ccggctttcc ccgtcaagct ctaaatcggg ggctcccttt agggttccga tttagtgctt

9061  tacggcacct cgaccccaaa aaacttgatt agggtgatgg ttcacgtagt gggccatcgc

9121  cctgatagac ggtttttcgc cctttgacgt tggagtccac gttctttaat agtggactct

9181  tgttccaaac tggaacaaca ctcaacccta tctcggtcta ttcttttgat ttataaggga

9241  ttttgccgat ttcggcctat tggttaaaaa atgagctgat ttaacaaaaa tttaacgcga

9301  attttaacaa aatattaacg cttacaattt ag
```

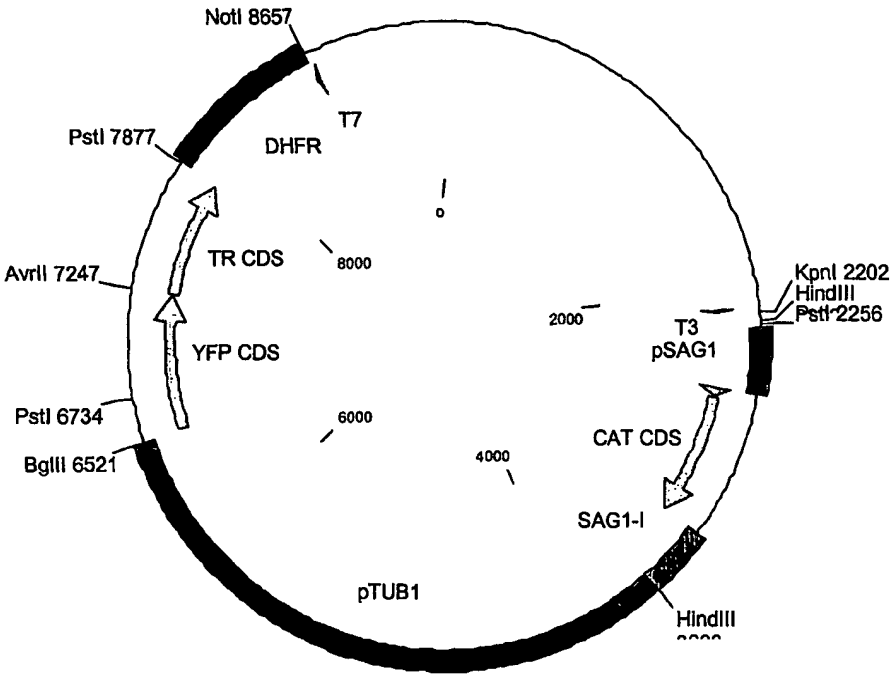
Figure 1 B

TubYFP/TR-sagCAT

Molecule Features:

Type	Start	End	Name	Description
GENE	2172	2192	T3	T3 primer for sequencing
REGION	2271	2580	pSAG1	SAG1 5' region including promoter
REGION	2581	2583	SAG1 ATG-I	first ATG
GENE	2581	2634	SAG1 CDS	SAG1 coding sequence
REGION	2632	2634	SAG1 ATG-II	second ATG
GENE	2638	3294	CAT CDS	chloramphenicol acetyl transferase coding sequence
REGION	3295	3607	SAG1-I	SAG1 3' untranslated region
REGION	3614	3747	SAG1-II	repeated part of 3' untranslated region used to start tub promoter
REGION	3748	3799	vector	part of unknown vector
REGION	3800	6520	pTUB1	TUB1 5' region including promoter
GENE	6530	7246	YFP CDS	Yellow fluorescent protein coding sequence
REGION	6530	6532	YFP ATG-I	first ATG
GENE	7253	7876	TR CDS	Tet repressor coding sequence
REGION	7253	7255	TR ATG-I	first ATG
REGION	7886	8656	DHFR	DHFR 3' untranslated region
GENE	8710	8690 C	T7	T7 primer for sequencing

Figure 1 C



ptub^YFP^TR_sagCAT

9332 bp

Figure 2 A

```
   1  agcttcctcg cagagattgt cagtgcatga cacaaccgcg aaaagccggc agccgcggta
      >>.........................'promoter.........................>

  61  atacggggac gaggaaaacg actgagcgtc acaacagaag cagccgagta aacggcgaag
      >.........................'promoter.........................>

 121  gaaatggaaa ggacccaagt aaaatttctt gaagaatttc agcgcaacaa ctctgcgggt
      >.........................'promoter.........................>

 181  tcttgcgaat agaggaattt cacttcctca tcgtctgatt tatgctttca tcatctgccg
      >.........................'promoter.........................>

 241  ctcaacagcc gaataaacgg ttctcggtcg cttccttaaa ctctacttca gtagttgaaa
      >.........................'promoter.........................>

 301  ctcttttgct tcacgagcct tcgtctcagc cctcaccgtc ctgagttctg tctttgttga
      >.........................'promoter.........................>

 361  ggaaagctcc cgctgaaaaa acaggacttt gtttgcagat tttcatgtgt actggaaagt
      >.........................'promoter.........................>

 421  gagatgtgac ttggggaagt ccgctttaaa atttccattg ttttctcaaa atgaaaagtc
      >.........................'promoter.........................>

                                              PstI
                                              -------
 481  taaaaaatcg aagtgcgtgc cccgcgagga attcccctct gcagatttgt tttgcattta
      >.........................'promoter.........................>

 541  tatgtcgttt ttacggagaa aagtcccaag ctgctgctcc ttctctaact agatgttgaa
      >.........................'promoter.........................>

 601  cgctagcaca tatgcaccag atgcttctga agtataccta aacgcacctt gggaacaact
      >.........................'promoter.........................>

 661  gtgctcccat tcataaaact catacaagtc accaagcatg ccatacccgt gagacataac
      >.........................'promoter.........................>

 721  aacggaagct agactactcc cccctgttat tgcacactat cgaaaaggat tcctaggttt
      >.........................'promoter.........................>

                                     PstI
                                     -------
 781  ctatcctctg ccttttcctg gggcacactg cagagaaact accgtgcgcg ctacctcccg
      >.........................'promoter.........................>

 841  acgtgcgagg cgatagcaaa acgcttttga aggaaaaagt cgagaaatcg acgactgcgt
      >.........................'promoter.........................>
```

```
 901  ctcttgaatc cgagagaggg atccaaccca ccgagttctc tgcatgtgca gcatctgcaa
      >.......................'promoter.......................>

 961  gaacgtgata atgcatgaac tcgatcatcg ccttatctgt gtgcatgcat tttcgaaaaa
      >.......................'promoter.......................>

1021  gaaaggcgtt ttctgcgcgg agactcgcgc ggaggcaaga cgagactttc tcctcttcca
      >.......................'promoter.......................>

1081  aactgcgagc cacgggggcg catgcaattt gaacatcacg caaaatccca aaacgggtgg
      >.......................'promoter.......................>

1141  ggtggagccg caaacttttt tggcatgcag cgttgagcct gagctgcggt gggggctttt
      >.......................'promoter.......................>

1201  gtcgcgagcg tggggtgccg cgagagagca acgcggcgct acgcggccga cgggtcttct
      >.......................'promoter.......................>

1261  gggaagcctc gcatttcctc gacgggttct cccctcaatt ctcttccttt ctctgcgtct
      >...........'promoter.............>>
                                        >>...........e...........>

1321  tcctcaggtg gcttcgtcac cggtttttct cctcgcgttc gtgctccgct gtgtgtccgg
      >............................e............................>

1381  agtgccgcga cagatcgagg gcgttctccg ctcccacctt gcggttccca atttcgattt
      >............................e............................>

1441  ttctccgtca ccatggggcg catgtacggt cctggaaagg gcatgtctgc ctctaggatg
      >.......................e.......................>>
                >>>
                >>.................cds...................>>
                                                          >>...>

1501  accatgatta cggattcact ggccgtcgtt ttacaacgtc gtgactggga aaaccctggc
      >...........................'LacZ...........................>

1561  gttacccaac ttaatcgcct tgcagcacat ccccctttcg ccagctggcg taatagcgaa
      >...........................'LacZ...........................>

1621  gaggcccgca ccgatcgccc ttcccaacag ttgcgcagcc tgaatggcga atggcgcttt
      >...........................'LacZ...........................>

1681  gcctggtttc cggcaccaga agcggtgccg gaaagctggc tggagtgcga tcttcctgag
      >...........................'LacZ...........................>

1741  gccgatactg tcgtcgtccc ctcaaactgg cagatgcacg gttacgatgc gcccatctac
      >...........................'LacZ...........................>

1801  accaacgtga cctatcccat tacggtcaat ccgccgtttg ttcccacgga gaatccgacg
      >...........................'LacZ...........................>
```

```
1861  ggttgttact cgctcacatt taatgttgat gaaagctggc tacaggaagg ccagacgcga
      >.........................'LacZ.........................>

1921  attatttttg atggcgttaa ctcggcgttt catctgtggt gcaacgggcg ctgggtcggt
      >.........................'LacZ.........................>

1981  tacggccagg acagtcgttt gccgtctgaa tttgacctga gcgcattttt acgcgccgga
      >.........................'LacZ.........................>

2041  gaaaaccgcc tcgcggtgat ggtgctgcgc tggagtgacg gcagttatct ggaagatcag
      >.........................'LacZ.........................>

2101  gatatgtggc ggatgagcgg cattttccgt gacgtctcgt tgctgcataa accgactaca
      >.........................'LacZ.........................>

2161  caaatcagcg atttccatgt tgccactcgc tttaatgatg atttcagccg cgctgtactg
      >.........................'LacZ.........................>

2221  gaggctgaag ttcagatgtg cggcgagttg cgtgactacc tacgggtaac agtttcttta
      >.........................'LacZ.........................>

2281  tggcagggtg aaacgcaggt cgccagcggc accgcgcctt tcggcggtga aattatcgat
      >.........................'LacZ.........................>

2341  gagcgtggtg gttatgccga tcgcgtcaca ctacgtctga acgtcgaaaa cccgaaactg
      >.........................'LacZ.........................>

2401  tggagcgccg aaatcccgaa tctctatcgt gcggtggttg aactgcacac cgccgacggc
      >.........................'LacZ.........................>

2461  acgctgattg aagcagaagc ctgcgatgtc ggtttccgcg aggtgcggat tgaaaatggt
      >.........................'LacZ.........................>

2521  ctgctgctgc tgaacggcaa gccgttgctg attcgaggcg ttaaccgtca cgagcatcat
      >.........................'LacZ.........................>

2581  cctctgcatg gtcaggtcat ggatgagcag acgatggtgc aggatatcct gctgatgaag
      >.........................'LacZ.........................>

2641  cagaacaact ttaacgccgt gcgctgttcg cattatccga accatccgct gtggtacacg
      >.........................'LacZ.........................>

2701  ctgtgcgacc gctacggcct gtatgtggtg gatgaagcca atattgaaac ccacggcatg
      >.........................'LacZ.........................>

2761  gtgccaatga atcgtctgac cgatgatccg cgctggctac cggcgatgag cgaacgcgta
      >.........................'LacZ.........................>

2821  acgcgaatgg tgcagcgcga tcgtaatcac ccgagtgtga tcatctggtc gctggggaat
      >.........................'LacZ.........................>
```

```
2881  gaatcaggcc acggcgctaa tcacgacgcg ctgtatcgct ggatcaaatc tgtcgatcct
      >.............................'LacZ.............................>

2941  tcccgcccgg tgcagtatga aggcggcgga gccgacacca cggccaccga tattatttgc
      >.............................'LacZ.............................>

3001  ccgatgtacg cgcgcgtgga tgaagaccag cccttcccgg ctgtgccgaa atggtccatc
      >.............................'LacZ.............................>

3061  aaaaaatggc tttcgctacc tggagagacg cgcccgctga tcctttgcga atacgcccac
      >.............................'LacZ.............................>

3121  gcgatgggta acagtcttgg cggtttcgct aaatactggc aggcgtttcg tcagtatccc
      >.............................'LacZ.............................>

3181  cgtttacagg gcggcttcgt ctgggactgg gtggatcagt cgctgattaa atatgatgaa
      >.............................'LacZ.............................>

3241  aacggcaacc cgtggtcggc ttacggcggt gattttggcg atacgccgaa cgatcgccag
      >.............................'LacZ.............................>

3301  ttctgtatga acggtctggt ctttgccgac cgcacgccgc atccagcgct gacggaagca
      >.............................'LacZ.............................>

3361  aaacaccagc agcagttttt ccagttccgt ttatccgggc aaaccatcga agtgaccagc
      >.............................'LacZ.............................>

3421  gaatacctgt tccgtcatag cgataacgag ctcctgcact ggatggtggc gctggatggt
      >.............................'LacZ.............................>

3481  aagccgctgg caagcggtga agtgcctctg gatgtcgctc cacaaggtaa acagttgatt
      >.............................'LacZ.............................>

3541  gaactgcctg aactaccgca gccggagagc gccgggcaac tctggctcac agtacgcgta
      >.............................'LacZ.............................>

3601  gtgcaaccga acgcgaccgc atggtcagaa gccgggcaca tcagcgcctg gcagcagtgg
      >.............................'LacZ.............................>

3661  cgtctggcgg aaaacctcag tgtgacgctc cccgccgcgt cccacgccat cccgcatctg
      >.............................'LacZ.............................>

3721  accaccagcg aaatggattt ttgcatcgag ctgggtaata agcgttggca atttaaccgc
      >.............................'LacZ.............................>

3781  cagtcaggct ttctttcaca gatgtggatt ggcgataaaa aacaactgct gacgccgctg
      >.............................'LacZ.............................>

3841  cgcgatcagt tcacccgtgc accgctggat aacgacattg gcgtaagtga agcgacccgc
      >.............................'LacZ.............................>
```

```
3901  attgacccta acgcctgggt cgaacgctgg aaggcggcgg gccattacca ggccgaagca
      >.............................'LacZ.............................>

3961  gcgttgttgc agtgcacggc agatacactt gctgatgcgg tgctgattac gaccgctcac
      >.............................'LacZ.............................>

4021  gcgtggcagc atcaggggaa aaccttattt atcagccgga aaacctaccg gattgatggt
      >.............................'LacZ.............................>

4081  agtggtcaaa tggcgattac cgttgatgtt gaagtggcga gcgatacacc gcatccggcg
      >.............................'LacZ.............................>

4141  cggattggcc tgaactgcca gctggcgcag gtagcagagc gggtaaactg gctcggatta
      >.............................'LacZ.............................>

4201  gggccgcaag aaaactatcc cgaccgcctt actgccgcct gttttgaccg ctgggatctg
      >.............................'LacZ.............................>

4261  ccattgtcag acatgtatac cccgtacgtc ttcccgagcg aaaacggtct gcgctgcggg
      >.............................'LacZ.............................>

4321  acgcgcgaat tgaattatgg cccacaccag tggcgcggcg acttccagtt caacatcagc
      >.............................'LacZ.............................>

4381  cgctacagtc aacagcaact gatggaaacc agccatcgcc atctgctgca cgcggaagaa
      >.............................'LacZ.............................>

4441  ggcacatggc tgaatatcga cggtttccat atggggattg gtggcgacga ctcctggagc
      >.............................'LacZ.............................>

4501  ccgtcagtat cggcggaatt ccagctgagc gccggtcgct accattacca gttggtctgg
      >.............................'LacZ.............................>

                  PstI
                  ------
4561  tgtcaaaaat aactgcagcc cacagaagct gcccgtctct cgttttcctc tcttttcgga
      >.....'LacZ......>>
                           >>.................DHFR .................>

4621  gggatcaggg agagtgcctc gggtcggaga gagctgacga gggggtgcca gagacccctg
      >.............................DHFR .............................>

4681  tgtcctttat cgaagaaaag ggatgactct tcatgtggca tttcacacag tctcacctcg
      >.............................DHFR .............................>

4741  ccttgttttc tttttgtcaa tcagaacgaa agcgagttgc gggtgacgca gatgtgcgtg
      >.............................DHFR .............................>

4801  tatccactcg tgaatgcgtt atcgttctgt atgccgctag agtgctggac tgttgctgtc
      >.............................DHFR .............................>
```

```
4861  tgcccacgac agcagacaac tttccttcta tgcacttgca ggatggtgca gcgcaaacga
      >.............................DHFR ..............................>

4921  cggagagaaa ggagcaccct ctcagtttcc ctacgatgtg ctgtcagttt cgactcttca
      >.............................DHFR ..............................>

4981  ccgcgaacga ttggcgatac gtctctgttg acttgttagg ctccgaccac gaagctccct
      >.............................DHFR ..............................>

5041  taactarata agccgcgaca cctaagtgta caccatttgc agatcgataa tctgcgaccg
      >.............................DHFR ..............................>

5101  ctgaatccgt ccagatcagt aaaaccgcac cacctaagtg taaaccttgt ttaggtcgat
      >.............................DHFR ..............................>

5161  aaaatgctac caacccccac ccacaatcga gccttgagcg tttctgcgca cgcgttggcc
      >.............................DHFR ..............................>

5221  tacgtgactt gctgatgcct gcctctggcc attcatgcca gtcagtgcgc ataaaaatgt
      >.............................DHFR ..............................>

5281  ggacacagtc ggttgacaag tgttctggca ggctacagtg acaccgcggt ggaggggat
      >.............................DHFR ..............................>

                      NotI
                     ---------
5341  ccactagttc tagagcggcc gccaccgcgg tggagctcca attcgcccta tagtgagtcg
      >...DHFR ....>>
                                                          <<....T7.....<

5401  tattacgcgc gctcactggc cgtcgtttta caacgtcgtg actgggaaaa ccctggcgtt
      <.T7..<<
            >>.........................pKS+.........................>

5461  acccaactta atcgccttgc agcacatccc cctttcgcca gctggcgtaa tagcgaagag
      >.............................pKS+.............................>

5521  gcccgcaccg atcgcccttc ccaacagttg cgcagcctga atggcgaatg ggacgcgccc
      >.............................pKS+.............................>

5581  tgtagcggcg cattaagcgc ggcgggtgtg gtggttacgc gcagcgtgac cgctacactt
      >.............................pKS+.............................>

5641  gccagcgccc tagcgcccgc tcctttcgct ttcttccctt cctttctcgc cacgttcgcc
      >.............................pKS+.............................>

5701  ggctttcccc gtcaagctct aaatcggggg ctccctttag ggttccgatt tagtgcttta
      >.............................pKS+.............................>

5761  cggcacctcg accccaaaaa acttgattag ggtgatggtt cacgtagtgg gccatcgccc
      >.............................pKS+.............................>
```

```
5821  tgatagacgg tttttcgccc tttgacgttg gagtccacgt tctttaatag tggactcttg
      >.............................pKS+.............................>

5881  ttccaaactg gaacaacact caaccctatc tcggtctatt cttttgattt ataagggatt
      >.............................pKS+.............................>

5941  ttgccgattt cggcctattg gttaaaaaat gagctgattt aacaaaaatt taacgcgaat
      >.............................pKS+.............................>

6001  tttaacaaaa tattaacgct tacaatttag gtggcacttt tcggggaaat gtgcgcggaa
      >.............................pKS+.............................>

6061  cccctatttg tttatttttc taaatacatt caaatatgta tccgctcatg agacaataac
      >.............................pKS+.............................>

6121  cctgataaat gcttcaataa tattgaaaaa ggaagagtat gagtattcaa catttccgtg
      >.............................pKS+.............................>

6181  tcgcccttat tccctttttt gcggcatttt gccttcctgt ttttgctcac ccagaaacgc
      >.............................pKS+.............................>

6241  tggtgaaagt aaaagatgct gaagatcagt tgggtgcacg agtgggttac atcgaactgg
      >.............................pKS+.............................>

6301  atctcaacag cggtaagatc cttgagagtt ttcgccccga agaacgtttt ccaatgatga
      >.............................pKS+.............................>

6361  gcacttttaa agttctgcta tgtggcgcgg tattatcccg tattgacgcc gggcaagagc
      >.............................pKS+.............................>

6421  aactcggtcg ccgcatacac tattctcaga atgacttggt tgagtactca ccagtcacag
      >.............................pKS+.............................>

6481  aaaagcatct tacggatggc atgacagtaa gagaattatg cagtgctgcc ataaccatga
      >.............................pKS+.............................>

6541  gtgataacac tgcggccaac ttacttctga caacgatcgg aggaccgaag gagctaaccg
      >.............................pKS+.............................>

6601  ctttttttgca caacatgggg gatcatgtaa ctcgccttga tcgttgggaa ccggagctga
      >.............................pKS+.............................>

6661  atgaagccat accaaacgac gagcgtgaca ccacgatgcc tgtagcaatg gcaacaacgt
      >.............................pKS+.............................>

6721  tgcgcaaact attaactggc gaactactta ctctagcttc ccggcaacaa ttaatagact
      >.............................pKS+.............................>

6781  ggatggaggc ggataaagtt gcaggaccac ttctgcgctc ggcccttccg gctggctggt
      >.............................pKS+.............................>
```

```
6841  ttattgctga taaatctgga gccggtgagc gtgggtctcg cggtatcatt gcagcactgg
      >.............................pKS+.............................>

6901  ggccagatgg taagccctcc cgtatcgtag ttatctacac gacggggagt caggcaacta
      >.............................pKS+.............................>

6961  tggatgaacg aaatagacag atcgctgaga taggtgcctc actgattaag cattggtaac
      >.............................pKS+.............................>

7021  tgtcagacca agtttactca tatatacttt agattgattt aaaacttcat ttttaattta
      >.............................pKS+.............................>

7081  aaaggatcta ggtgaagatc ctttttgata atctcatgac caaaatccct taacgtgagt
      >.............................pKS+.............................>

7141  tttcgttcca ctgagcgtca gaccccgtag aaaagatcaa aggatcttct tgagatcctt
      >.............................pKS+.............................>

7201  tttttctgcg cgtaatctgc tgcttgcaaa caaaaaaacc accgctacca gcggtggttt
      >.............................pKS+.............................>

7261  gtttgccgga tcaagagcta ccaactcttt ttccgaaggt aactggcttc agcagagcgc
      >.............................pKS+.............................>

7321  agataccaaa tactgtcctt ctagtgtagc cgtagttagg ccaccacttc aagaactctg
      >.............................pKS+.............................>

7381  tagcaccgcc tacatacctc gctctgctaa tcctgttacc agtggctgct gccagtggcg
      >.............................pKS+.............................>

7441  ataagtcgtg tcttaccggg ttggactcaa gacgatagtt accggataag gcgcagcggt
      >.............................pKS+.............................>

7501  cgggctgaac gggggttcg tgcacacagc ccagcttgga gcgaacgacc tacaccgaac
      >.............................pKS+.............................>

7561  tgagatacct acagcgtgag ctatgagaaa gcgccacgct tcccgaaggg agaaaggcgg
      >.............................pKS+.............................>

7621  acaggtatcc ggtaagcggc agggtcggaa caggagagcg cacgagggag cttccagggg
      >.............................pKS+.............................>

7681  gaaacgcctg gtatctttat agtcctgtcg ggtttcgcca cctctgactt gagcgtcgat
      >.............................pKS+.............................>

7741  ttttgtgatg ctcgtcaggg gggcggagcc tatggaaaaa cgccagcaac gcggcctttt
      >.............................pKS+.............................>

7801  tacggttcct ggccttttgc tggccttttg ctcacatgtt ctttcctgcg ttatcccctg
      >.............................pKS+.............................>
```

```
7861  attctgtgga taaccgtatt accgcctttg agtgagctga taccgctcgc cgcagccgaa
      >.............................pKS+.............................>

7921  cgaccgagcg cagcgagtca gtgagcgagg aagcggaaga gcgcccaata cgcaaaccgc
      >.............................pKS+.............................>

7981  ctctccccgc gcgttggccg attcattaat gcagctggca cgacaggttt cccgactgga
      >.............................pKS+.............................>

8041  aagcgggcag tgagcgcaac gcaattaatg tgagttagct cactcattag gcaccccagg
      >.............................pKS+.............................>

8101  ctttacactt tatgcttccg gctcgtatgt tgtgtggaat tgtgagcgga taacaatttc
      >.............................pKS+.............................>

8161  acacaggaaa cagctatgac catgattacg ccaagcgcgc aattaaccct cactaaaggg
      >...................pKS+....................>>
                                                  >>.......T3 .......>

                 KpnI                                    HindIII
                 ------                                   ------
8221  aacaaaagct gggtaccggg ccccccctcg aggtcgacgg tatcgata
      >>
```

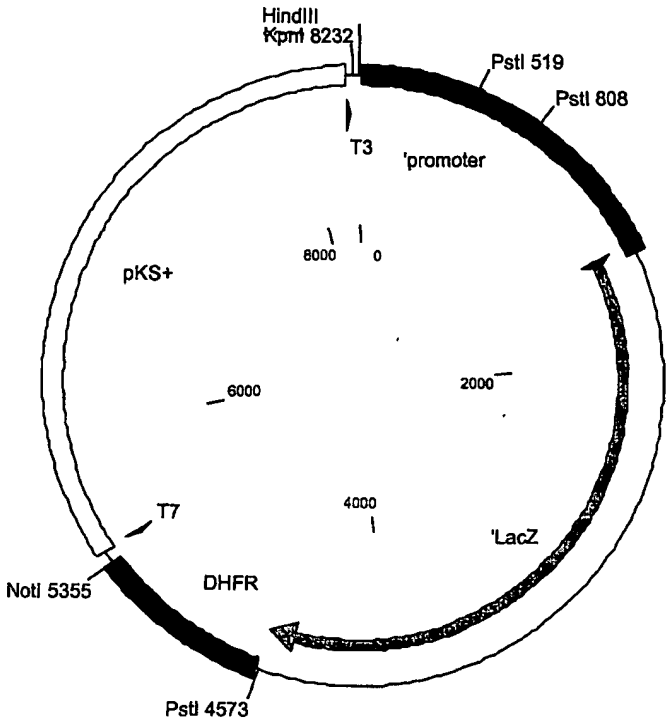
Figure 2 B

Molecule: S13/lacZ, 8268 bps DNA Circular

Molecule Features:

Type	Start	End		Name	Description
REGION	1	1294		'promoter	promoterregio
REGION	1295	1492		e	exon 1
REGION	1453	1455		atg	ATG start
GENE	1453	1492		cds	gen
GENE	1495	4578		'LacZ	LacZ gene from E.coli BL21
REGION	4582	5354		DHFR	DHFR 3' untranslated region
GENE	5408	5388	C	T7	T7 primer for sequencing
REGION	5408	8202		pKS+	pKS+ vector
GENE	8202	8222		T3	T3 primer for sequencing

Figure 2 C



S13/lacZ

8268 bp

Figure 3 A

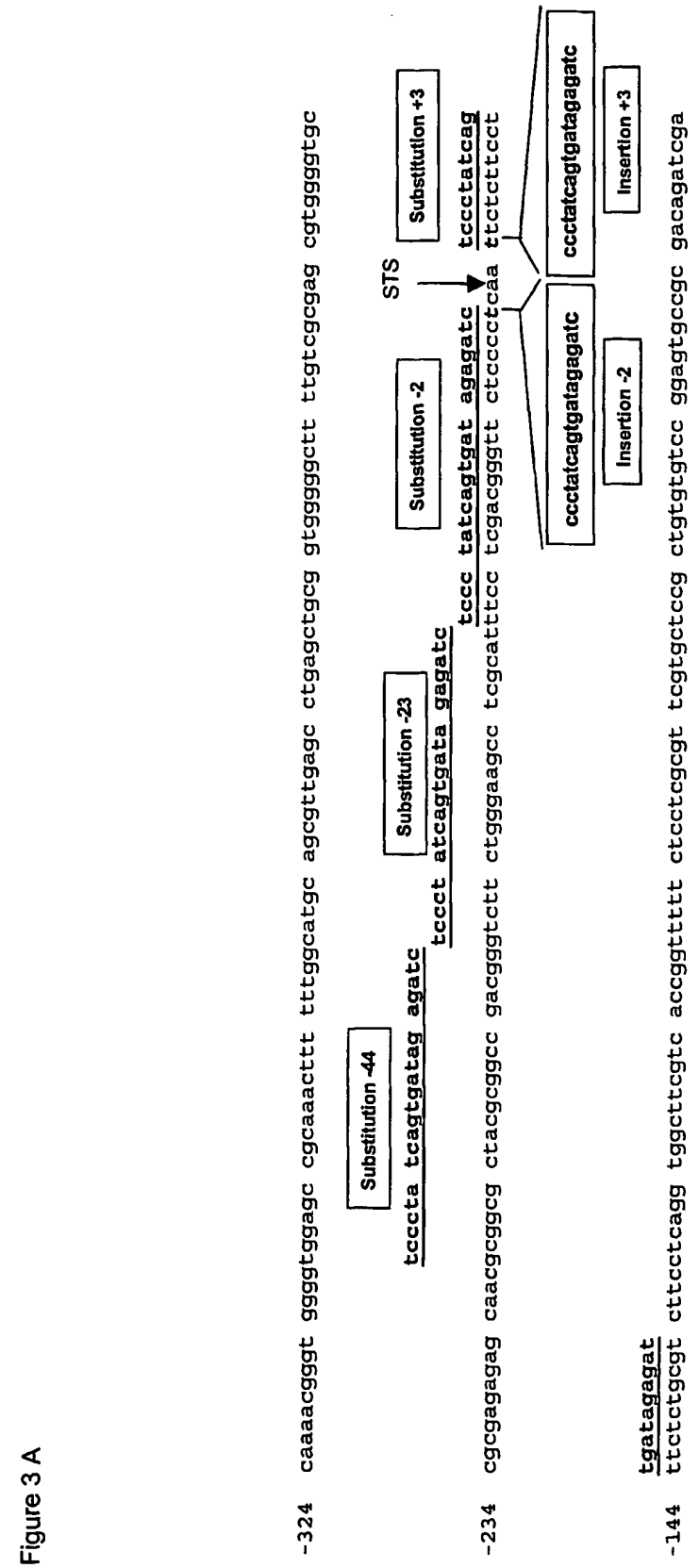
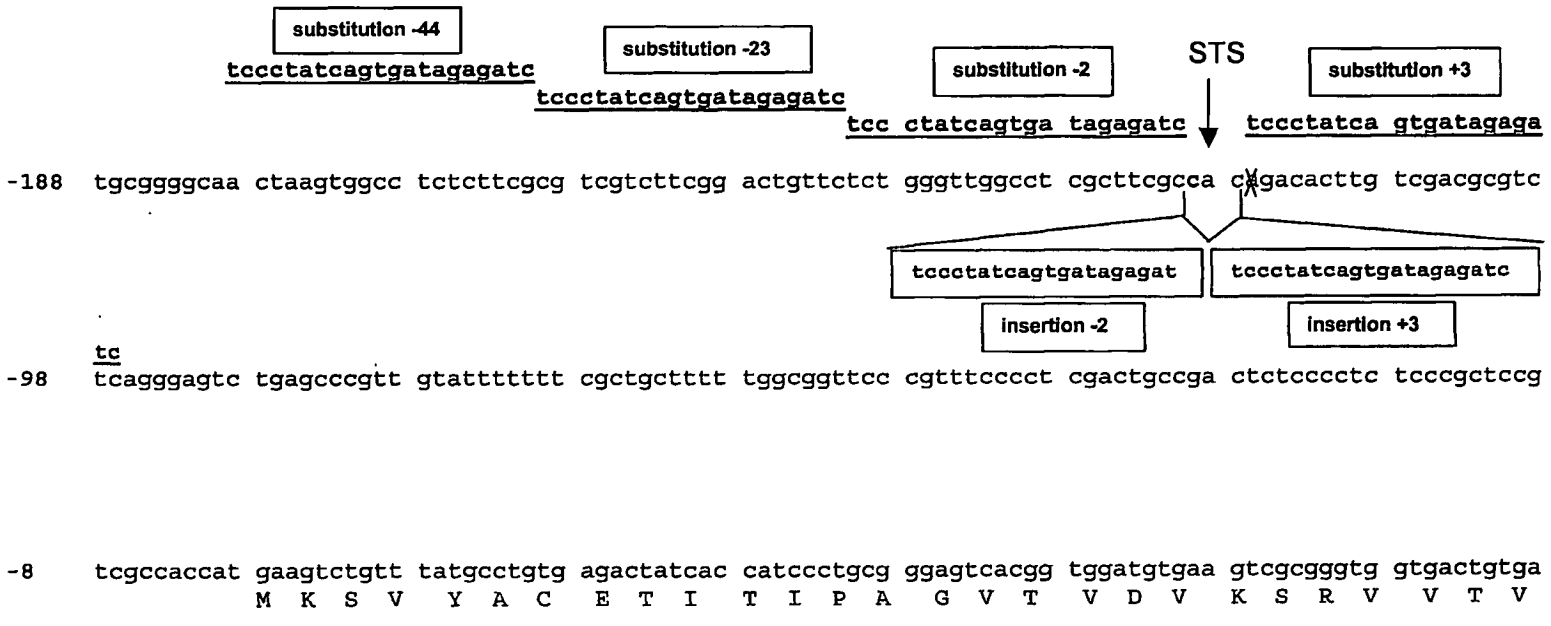

-324 caaaacgggt ggggtggagc cgcaaacttt ttggcatgc agcgttgagc ctgagctgcg gtgggggctt ttgtcgcgag cgtggggtgc
Substitution -44
Substitution -23
Substitution -2
STS
Substitution +3
tcccta tcagtgatag agatc
tccct atcagtgata gagatc
tccc tatcagtgat agagatc
tccctatcag
-234 cgcgagagag caacgcggcg ctacgcggcc gacgggtctt ctgggaagcc tcgcatttcc tcgacgggtt ctcccctcaa ttctcttcct
ccctatcagtgatagagatc
ccctatcagtgatagagatc
Insertion -2
Insertion +3
tgatagagat
-144 ttctctgcgt cttcctcagg tggcttcgtc accggtttt ctcctcgcgt tcgtgctccg ctgtgtgtcc ggagtgccgc gacagatcga
-54 gggcgttctc cgctcccacc ttgcggttcc caatttcgat tttctccgt caccatgggg cgc
M G R

Figure 3 B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substitution -23
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tcc ctatcagtga tagagatc
STS
substitution +3
tccctatca gtgatagaga
-188 tgcggggcaa ctaagtggcc tctcttcgcg tcgtcttcgg actgttctct gggttggcct cgcttcgcca cagacacttg tcgacgcgtc
tccctatcagtgatagagat
tccctatcagtgatagagatc
insertion -2
insertion +3
tc
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-8 tcgccaccat gaagtctgtt tatgcctgtg agactatcac catccctgcg ggagtcacgg tggatgtgaa gtcgcgggtg gtgactgtga
M K S V Y A C E T I T I P A G V T V D V K S R V V T V

Figure 4

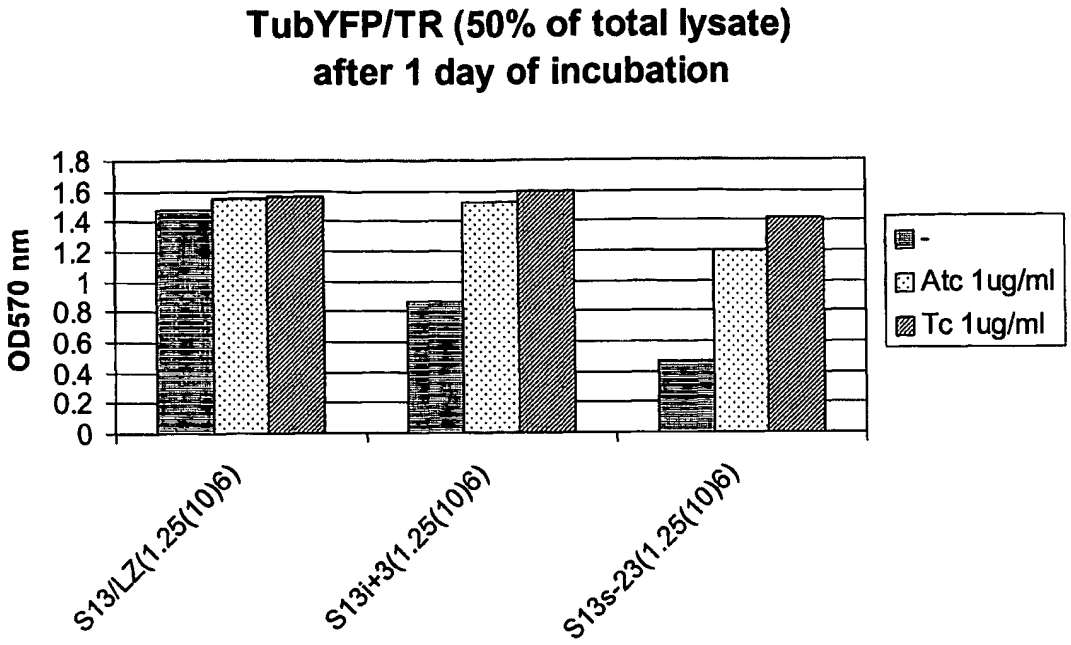
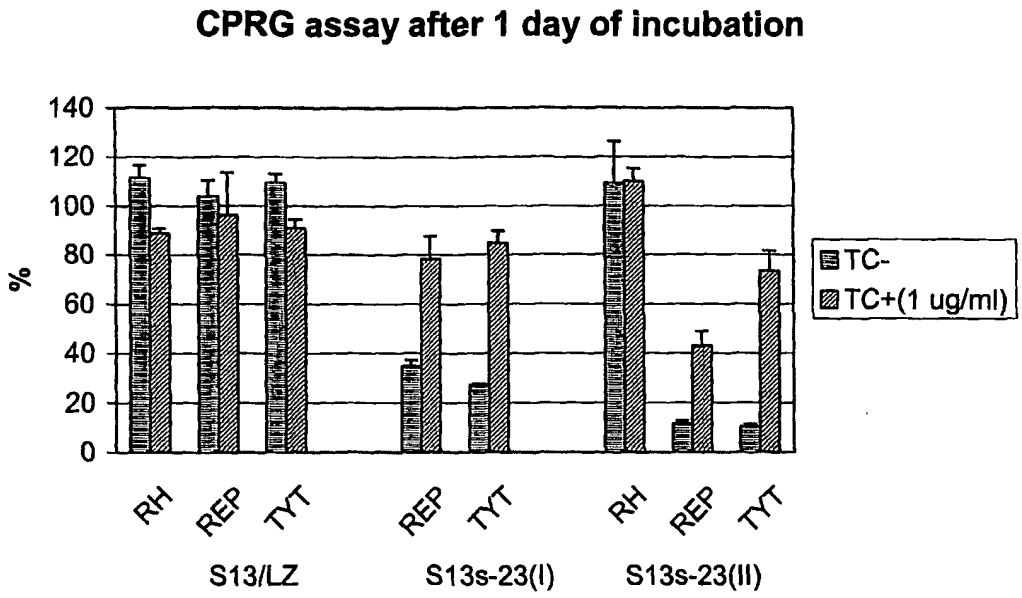

TubYFP/TR (50% of total lysate)
after 1 day of incubation
OD570 nm
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
S13/LZ(1.25(10)6)
S13i+3(1.25(10)6)
S13s-23(1.25(10)6)
-
Atc 1ug/ml
Tc 1ug/ml

Figure 5


CPRG assay after 1 day of incubation
140
120
100
80
60
40
20
0
%
RH
REP
TYT
REP
TYT
RH
REP
TYT
S13/LZ
S13s-23(I)
S13s-23(II)
TC-
TC+(1 ug/ml)

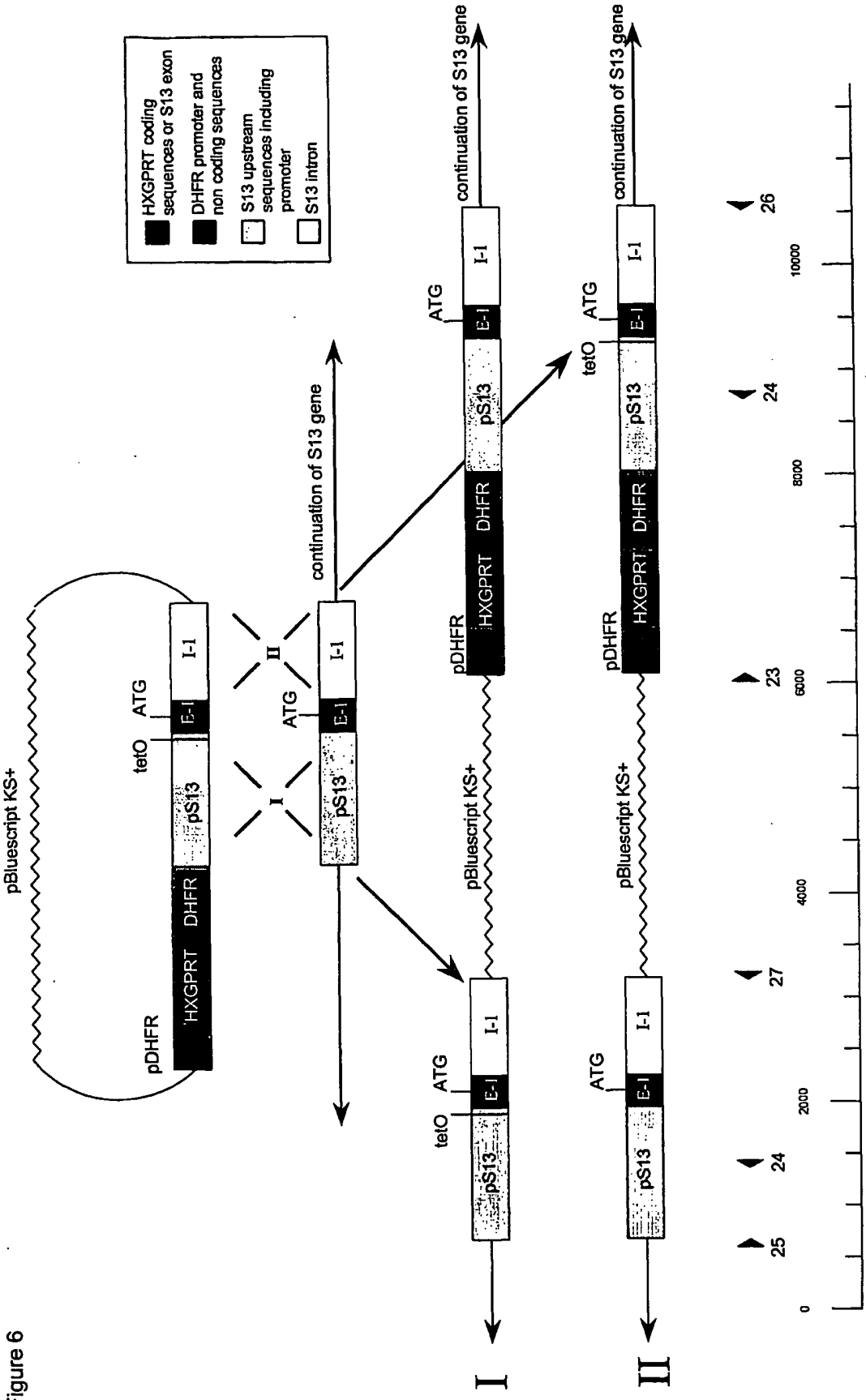

HXGPRT coding sequences or S13 exon
DHFR promoter and non coding sequences
S13 upstream sequences including promoter
S13 intron
pBluescript KS+
pDHFR
HXGPRT
DHFR
tetO
ATG
E-1
I-1
pS13
continuation of S13 gene
I
II
0
2000
4000
6000
8000
10000
25
24
27
23
24
26

Figure 6

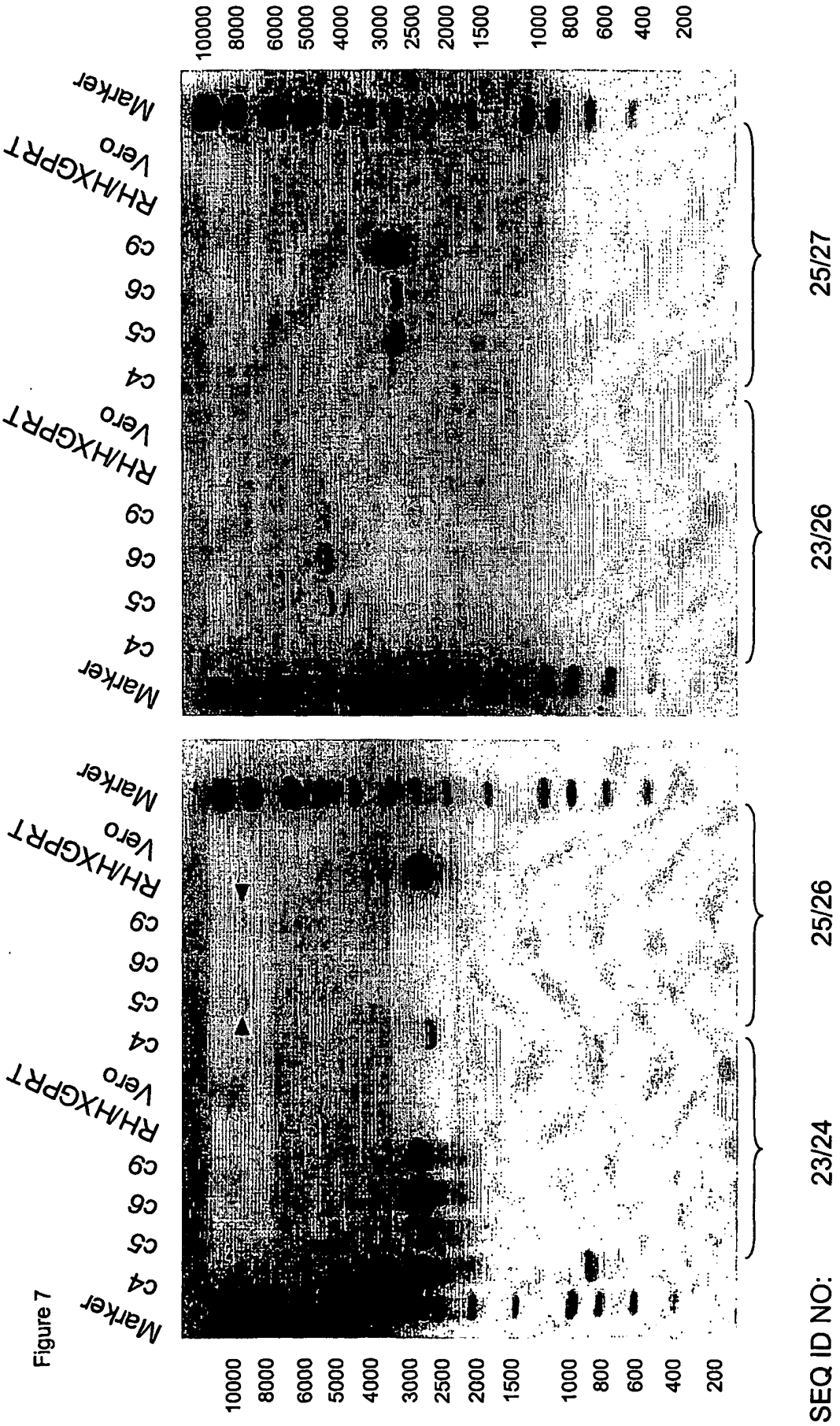


Figure 7

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